

This listing of claims will replace all prior versions, and listings, of claims in the application.

IN THE CLAIMS:

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59. (Previously Presented) Apparatus comprising:

a printed circuit board having in at least one first region a plurality of component contacts configured to receive electronic components;

a plurality of electrically conductive traces formed on the printed circuit board, each of a selected number of the traces being electrically connected to a corresponding one of the component contacts and extending from the at least one first region to at least one second region of the printed circuit board; and

at least one programmable integrated circuit mounted on the at least one second region and containing a plurality of conductive leads, the at least one programmable integrated circuit being programmable by a user to at least partially form an interconnect of selected electrically conductive traces on the printed circuit board to achieve a desired electrical function from the electronic components,

wherein at least a plurality of the conductive leads are electrically connected to a corresponding one of the electrically conductive traces formed on the printed circuit board to form an electrically conductive path from each of the component contacts to the corresponding conductive lead of the at least one programmable integrated circuit, and

wherein the printed circuit board, the selected number of conductive traces, and the component contacts have a standard configuration independent of the electronic components and the electrical function to be implemented by the electronic components when selectively interconnected by the at least one programmable integrated circuit.

60. (Previously Presented) The apparatus of claim 59, wherein the printed circuit board contains more than one layer of conductive traces.

61. (Previously Presented) The apparatus of claim 59, wherein at least some of the plurality of component contacts comprise a plurality of holes in the printed circuit board, each hole being appropriate for receipt of a conductive lead of an electronic component.

62. (Previously Presented) The apparatus of claim 61, wherein the interior surface of each hole is plated with a conductive material.

63. (Previously Presented) The apparatus of claim 62, wherein the conductive material on the interior of each hole is electrically connected to a corresponding one of the electrically conductive traces.

64. (Previously Presented) The apparatus of claim 59, further including the electronic components mounted on the printed circuit board, each of the electronic components having at least two electrical leads, each electrical lead of the electronic components making contact with a corresponding one of the component contacts.

65. (Previously Presented) The apparatus of claim 59, wherein at least some of the component contacts on the printed circuit board comprise pads, each pad being connected to a corresponding one of the plurality of electrically conductive traces formed on the printed circuit board.

66. (Previously Presented) The apparatus of claim 65, wherein each pad is connected by a conductive lead to a hole formed through the printed circuit board, the hole being plated on its interior surface with a conductive material and the hole being in electrical contact with a corresponding one of the electrically conductive traces formed on the printed circuit board.

67. (Currently Amended) Apparatus comprising:

a printed circuit board;

a plurality of first electrical contacts formed in the printed circuit board configured to receive leads of electronic components to be mounted on the printed circuit board;

a corresponding plurality of second electrical contacts formed in a selected region of the printed circuit board;

conductive traces formed on the printed circuit board, each of a selected number of the conductive traces uniquely interconnecting one of the first electrical contacts to a corresponding one of the second electrical contacts; and

at least one programmable integrated circuit chip mounted on the printed circuit board, selected ones of the second electrical contacts receiving leads from the at least one programmable integrated circuit chip thereby to enable a user to programmably ~~at least partially form an electrically conductive interconnect path between~~ of selected ones of the first electrical contacts so as to configure the electronic components to be mounted on the printed circuit board into a selected electrical circuit,

wherein the printed circuit board, the selected number of conductive traces, and the first and second electrical contacts have a standard configuration independent of the electronic components to be mounted on the printed circuit board.

68. (Previously Presented) The apparatus of claim 67, further including means for determining a state of the at least one programmable integrated circuit chip and for determining a state of the signals on the conductive traces.

69. (Previously Presented) The apparatus of claim 68, further including means for transmitting control signals to the at least one integrated circuit chip and for controlling a configuration of the at least one integrated circuit chip so as to control interconnection of the conductive traces formed on the printed circuit board.

70. (Previously Presented) The apparatus of claim 67, wherein the printed circuit board comprises:

a first portion thereof containing the conductive traces for interconnecting the electronic components without use of a programmable integrated circuit; and

a second portion thereof containing the at least one programmable integrated circuit chip for interconnecting the electronic components formed on the second portion of the printed circuit board.

71. (Previously Presented) Apparatus comprising:

a printed circuit board;

a plurality of component holes configured to receive leads of electronic components;

a corresponding plurality of PIC holes;

one or more layers of conductive traces formed on the printed circuit board, each of a selected number of the conductive traces uniquely connecting at least one of the component holes to at least one of the PIC holes; and

one or more programmable interconnect chips mounted on the printed circuit board, selected ones of the PIC holes receiving leads from the one or more programmable interconnect chips to enable a user to programmably at least partially form an interconnect of the electronic components into a desired electrical circuit,

wherein the printed circuit board, the selected number of conductive traces, and the component and PIC holes have a standard configuration independent of the electronic components to be mounted on the printed circuit board.

72. (Previously Presented) The apparatus of claim 71, wherein the printed circuit board comprises:

a first portion thereof containing the conductive traces for interconnecting the electronic components without the use of a programmable integrated circuit; and

a second portion thereof containing at least one programmable integrated circuit for interconnecting the electronic components formed on the second portion of the printed circuit board.

73. (Canceled).

74. (Previously Presented) The apparatus of claim 59, further comprising a second level programmable integrated circuit which is electrically connected to said at least one programmable integrated circuit and programmable to complete said interconnect of selected electrically conductive traces.

75. (Previously Presented) The apparatus of claim 74, wherein said second level programmable integrated circuit is electrically connected to each of said at least one programmable integrated circuits.

76. (Previously Presented) The apparatus of claim 74, wherein said second level programmable integrated circuit is mounted on said printed circuit board.

77. (Previously Presented) The apparatus of claim 67, further comprising a second level programmable integrated circuit which is electrically connected to said at least one programmable

integrated circuit and programmable to complete said interconnect of selected ones of the first electrical contacts.

78. (Previously Presented) The apparatus of claim 77, wherein said second level programmable integrated circuit is electrically connected to each of said at least one programmable integrated circuits.

79. (Previously Presented) The apparatus of claim 77, wherein said second level programmable integrated circuit is mounted on said printed circuit board.

80. (Previously Presented) The apparatus of claim 71, further comprising a second level programmable integrated circuit which is electrically connected to said one or more programmable interconnect chips and programmable to complete said interconnect of electronic components.

81. (Previously Presented) The apparatus of claim 80, wherein said second level programmable integrated circuit is electrically connected to each of said at least one programmable integrated circuits.

82. (Previously Presented) The apparatus of claim 80, wherein said second level programmable integrated circuit is mounted on said printed circuit board.